

**COMPUTER SCIENCE  
AND APPLICATION  
PAPER—II**

Test Booklet  
Series



Time Allowed : 2 Hours

Maximum Marks : 200

**INSTRUCTIONS FOR CANDIDATES**

1. Immediately after the commencement of the examination, you should check that this Test Booklet **does not** have any unprinted or torn or missing pages or questions etc. If so, get it replaced by a complete Test Booklet.
2. Write your Roll Number on the Test Booklet in the Box provided alongside.
3. This Test Booklet contains **200** questions. Each question comprises of four responses (answers) within as (A), (B), (C) and (D). You should select the response which you feel is the most **correct** and mark it on the OMR Answer Sheet.
4. You have to mark all your responses **ONLY** on the separate **OMR Answer Sheet** provided. Also read the directions in the **OMR Answer Sheet**. Fill in all the entries in the OMR Answer Sheet **correctly**. **DO NOT WRITE/MARK ANYTHING EXCEPT IN THE SPACE PROVIDED FOR IT**, failing which your OMR Answer Sheet **shall not** be evaluated.
5. **Count** the number of **questions attempted** carefully and write it down in the space provided in the **OMR Answer Sheet**.
6. After you have completed filling in all your responses on the **OMR Answer Sheet** and the examination has concluded, **you should hand over** to the Invigilator **only the OMR Answer Sheet (in original)**. **You are permitted to take away 2nd Copy of the OMR Answer Sheet and Test Booklet.**
7. Each question carries 1 mark.
8. Candidature would be cancelled in case of non-compliance with any of these instructions.
9. **Penalty for wrong answers :**  
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, 0.5 mark of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.
10. **"Mobile phones, calculators, IT gadgets, smart watch and any other electronic devices such as Bluetooth etc. are not allowed inside the premises where the examination is being conducted. Any infringements of these instructions shall entail disciplinary action including ban from future examinations."**

1. If  $N^2 = N \times N$ ,  $N$  is set of natural numbers and  $R$  is relation on  $N^2$ , show that  $R \subset N^2 \times N^2$  i.e.  $\langle x, y \rangle R \langle u, v \rangle \Leftrightarrow xv = yu$ , then which of the following are **true**?
  - (i) Reflexive
  - (ii) Symmetric
  - (iii) Transitive
  - (iv) Asymmetric
  - (A) (i) and (ii) only
  - (B) (ii) and (iii) only
  - (C) (i), (iii) and (iv) only
  - (D) (i), (ii) and (iii) only
2. Which of the following properties hold for the adjacency matrix  $A$  of a simple undirected unweighted graph having  $n$  vertices?
  - (A) The diagonal entries of  $A^2$  are the degrees of the vertices of the graph
  - (B) If the graph is connected, none of the entries of  $A^{n-1}$  can be zero
  - (C) If the sum of all the elements of  $A$  is at most  $2(n-1)$ , then the graph must be acyclic
  - (D) If there is at least a 1 in each of  $A$ 's rows and columns, then the graph must be connected
3. The least number of computers required to connect 10 computers to 5 routers to guarantee 5 computers can directly access 5 routers is
  - (A) 74
  - (B) 104
  - (C) 30
  - (D) 67
4. In how many ways can 8 different dolls be packed in 5 identical gift boxes such that no box is empty if any of the boxes holds all of the toys?
  - (A) 2351
  - (B) 365
  - (C) 2740
  - (D) 1260
5. A binary operation  $\oplus$  on a set of integers is defined as  $x \oplus y = x^2 + y^2$ . Which one of the following statements is **true** about  $\oplus$ ?
  - (A) Commutative but not associative
  - (B) Both commutative and associative
  - (C) Associative but not commutative
  - (D) Neither commutative nor associative
6. Consider the set  $S = \{1, \omega, \omega^2\}$ , where  $\omega$  and  $\omega^2$  are cube roots of unity. If  $*$  denotes the multiplication operation, the structure  $(S, *)$  forms
  - (A) a group
  - (B) a ring
  - (C) an integral domain
  - (D) a field
7. Which of the following functions is **not** a mathematics function?
  - (A) Many to one
  - (B) One-to-many
  - (C) One to one
  - (D) All of the above

8. The function  $(g \circ f)$  is \_\_\_\_\_, if the function  $f$  and  $g$  are onto functions.
- (A) into function  
(B) one to one function  
(C) onto function  
(D) one-to-many function
9. Suppose that a connected planar graph has six vertices, each of degree four. Into how many regions is the plane divided by a planar representation of this graph?
- (A) 6  
(B) 8  
(C) 12  
(D) 20
10. The maximum number of edges in a 8-node undirected graph without self-loops is
- (A) 45  
(B) 61  
(C) 28  
(D) 17
11. A tree has  $2n$  vertices of degree 1,  $3n$  vertices of degree 2,  $n$  vertices of degree 3. Determine the number of vertices and edges in a tree.
- (A) 12·11  
(B) 11·12  
(C) 10·11  
(D) 9·10
12. At a software company, skilled workers have been hired for a project. Out of 75 candidates, 48 of them were software engineers; 35 of them were hardware engineers; 42 of them were network engineers; 18 of them had skills in all three jobs and all of them had skills in at least one of these jobs. How many candidates were hired who were skilled in exactly 2 jobs?
- (A) 69  
(B) 14  
(C) 3  
(D) 8
13. There are 9 letters having different colors (red, orange, yellow, green, blue, indigo, violet) and 4 boxes each of different shapes (tetrahedron, cube, polyhedron, dodecahedron). How many ways are there to place these 9 letters into the 4 boxes such that each box contains at least 1 letter?
- (A) 260100  
(B) 878760  
(C) 437102  
(D) 256850
14. Which of the following is an equivalence relation on  $R$ , for  $a, b \in Z$ ?
- (A)  $(a - b) \in Z$   
(B)  $(a^2 + c) \in Z$   
(C)  $(ab + cd) / 2 \in Z$   
(D)  $(2c^3) / 3 \in Z$
15. Determine the number of equivalence classes that can be described by the set  $\{2, 4, 5\}$ .
- (A) 125  
(B) 5  
(C) 16  
(D) 72

16. The time complexity to test whether a graph is bipartite or not is said to be \_\_\_\_\_ using depth first search.
- (A)  $O(n^3)$
  - (B) linear time
  - (C)  $O(1)$
  - (D)  $O(n \log n)$
17. Every complete bipartite graph must not be
- (A) planar graph
  - (B) line graph
  - (C) complete graph
  - (D) subgraph
18.  $G$  is a simple undirected graph and some vertices of  $G$  are of odd degree. Add a node  $n$  to  $G$  and make it adjacent to each odd degree vertex of  $G$ . The resultant graph is
- (A) complete bipartite graph
  - (B) Hamiltonian cycle
  - (C) regular graph
  - (D) Euler graph
19. The  $2^n$  vertices of a graph  $G$  corresponds to all subsets of a set of size  $n$ , for  $n \geq 4$ . Two vertices of  $G$  are adjacent if and only if the corresponding sets intersect in exactly two elements. The number of connected components in  $G$  can be
- (A)  $n + 2$
  - (B)  $3^{n/2}$
  - (C)  $n^2$
  - (D)  $2^n$
20. Spanning trees have a special class of depth-first search trees named
- (A) Euclidean minimum spanning trees
  - (B) Trémaux trees
  - (C) complete bipartite graphs
  - (D) decision trees
21. For every spanning tree with  $n$  vertices and  $n$  edges, what is the least number of different spanning trees that can be formed?
- (A) 2
  - (B) 5
  - (C) 3
  - (D) 4
22. If  $A$  is any statement, then which of the following is a tautology?
- (A)  $A \wedge F$
  - (B)  $A \vee F$
  - (C)  $A \vee \neg A$
  - (D)  $A \wedge T$
23.  $(A \vee \neg A) \vee (q \vee T)$  is a
- (A) tautology
  - (B) contradiction
  - (C) contingency
  - (D) None of the above

24. Which of the following statements is a proposition?  
 (A) Get me a glass of milkshake  
 (B) God bless you!  
 (C) What is the time now?  
 (D) The only odd prime number is 2
25. Let  $P$ : I am in Bangalore.;  $Q$ : I love cricket.; then  $q \rightarrow p$  ( $q$  implies  $p$ ) is  
 (A) If I love cricket then I am in Bangalore  
 (B) If I am in Bangalore then I love cricket  
 (C) I am not in Bangalore  
 (D) I love cricket
26. Let  $P$ : We should be honest.,  $Q$ : We should be dedicated.,  $R$ : We should be overconfident. Then 'We should be honest or dedicated but not overconfident.' is best represented by  
 (A)  $\sim P \vee \sim Q \vee R$   
 (B)  $P \wedge \sim Q \wedge R$   
 (C)  $P \vee Q \wedge R$   
 (D)  $P \vee Q \wedge \sim R$
27. What is the decimal value of the binary number 101010?  
 (A) 32  
 (B) 54  
 (C) 42  
 (D) 43
28. Which of the following is **not** an alphabet used to denote a hexadecimal number?  
 (A) F  
 (B) C  
 (C) G  
 (D) A

29. Convert the hexadecimal number C6 to binary number.  
 (A) 10010110  
 (B) 11000100  
 (C) 10100110  
 (D) 11000110
30. What are the mantissa and exponent required respectively to represent '5' in binary floating point representation?  
 (A) 011,0.110000  
 (B) 0.110000,011  
 (C) 011,0.101000  
 (D) 0.101000,011
31. The smallest integer that can be represented by an 8-bit number in 2's complement form is  
 (A) -256  
 (B) -128  
 (C) -127  
 (D) 0
32.  $(1217)_8$  is equivalent to  
 (A)  $(1217)_{16}$   
 (B)  $(028F)_{16}$   
 (C)  $(2297)_{10}$   
 (D)  $(0B17)_{16}$
33. If  $73_x$  (in base-x number system) is equal to  $54_y$  (in base-y number system), the possible values of  $x$  and  $y$  are  
 (A) 8, 16  
 (B) 10, 12  
 (C) 9, 13  
 (D) 8, 11

**34.** The hexadecimal equivalent of the octal number 2357 is

- (A) 2EE
- (B) 2FF
- (C) 4EF
- (D) 4FE

**35.** The number of 1's in the binary representation of  $(3 \times 4096 + 15 \times 256 + 5 \times 16 + 3)$  are

- (A) 8
- (B) 9
- (C) 10
- (D) 12

**36.** TTL uses

- (A) multi emitter transistor
- (B) multi collector transistor
- (C) multi base transistor
- (D) multi emitter or multi collector transistor

**37.** As compared to TTL, ECL has

- (A) lower power dissipation
- (B) higher propagation delay
- (C) lower propagation delay
- (D) higher noise margin

**38.** What is an object in C++?

- (A) It is a function of class
- (B) It is an instance of class
- (C) It is a datatype of class
- (D) It is a part of the syntax of class

**39.** Identify the logical AND operator.

- (A) ||
- (B) &&
- (C) &
- (D) !

**40.** Identify the size of int datatype in C++.

- (A) 1 byte
- (B) 2 bytes
- (C) 4 bytes
- (D) Depends on compiler

**41.** The constants in C++ are also known as

- (A) pre-processor
- (B) literals
- (C) const
- (D) None of the above

**42.** Using which of the following data types can 19.54 be represented?

- (A) void
- (B) double
- (C) int
- (D) None of the above

**43.** What is the ASCII value of '\0' character?

- (A) 32
- (B) 24
- (C) 48
- (D) 0

44. Which of the following data types is supported in C++ but **not** in C?

- (A) int
- (B) bool
- (C) double
- (D) float

45. Identify the **correct** syntax for declaring arrays in C++.

- (A) array arr[10]
- (B) array{10}
- (C) int arr[10]
- (D) int arr

46. Identify the **correct** function from which the execution of C++ program starts.

- (A) new()
- (B) start()
- (C) pow()
- (D) main()

47. Identify the **correct** range of signed char.

- (A) -256 to 255
- (B) -128 to 127
- (C) 0 to 255
- (D) 0 to 127

48. Identify the **correct** definition of '\*' operator in pointer.

- (A) Address of operator
- (B) Value of address operator
- (C) Multiplication operator
- (D) All of the above

49. How many times will the print statement be executed?

```
main(){  
int i = 0;  
label:  
cout << "Hello;  
i++;  
if(i < 3){  
goto label;  
}  
}
```

- (A) 1 time
- (B) 2 times
- (C) 3 times
- (D) Error

50. Goto can be classified into

- (A) label
- (B) variable
- (C) operator
- (D) function

51. Find the output of the following program.

```
main(){  
cout << - 10 - 10 - 10;  
}  
(A) 0  
(B) -30  
(C) 30  
(D) 20
```

52. Choose the type of loop which is guaranteed to execute at least once?

- (A) for loop
- (B) do-while
- (C) while
- (D) None of the above

53. Choose the size of the below struct.

```
Struct{  
  Int a;  
  Char b;  
  Float c;  
}
```

- (A) 2
- (B) 4
- (C) 7
- (D) 10

54. Which of the following is **true** for variable names in C?

- (A) They can contain alphanumeric characters as well as special characters
- (B) It is not an error to declare a variable to be one of the keywords (like goto, static)
- (C) Variable names cannot start with a digit
- (D) Variable can be of any length

55. What is short int in C programming?

- (A) The basic data type of C
- (B) Qualifier
- (C) Short is the qualifier and int is the basic data type
- (D) All of the above

56. What will be the output of the following C code?

```
#include <stdio.h>  
  
int main()  
{  
  int y = 10000;  
  int y = 34;  
  printf("Hello World! %d\n", y);  
  return 0;  
}
```

- (A) Compilation Error (due to redeclaration of 'y')
- (B) Hello World! 10000
- (C) Hello World! 34
- (D) Undefined behaviour

57. What will be the output of the following C code on a 64 bit machine?

```
#include <stdio.h>  
  
union Sti  
{  
  int nu;  
  char m;  
};  
  
int main()  
{  
  union Sti s;  
  printf("%d", sizeof(s));  
  return 0;  
}
```

- (A) 8
- (B) 5
- (C) 9
- (D) 4



58. Given that  $x = 7.5$ ,  $j = -1.0$ ,  $n = 1.0$ ,  $m = 2.0$ , then the value of `--x + j == x > n >= m` is

- (A) 0
- (B) 1
- (C) 2
- (D) 3

59. Which of the following is **true** about arrays in C?

- (A) For every type T, there can be an array of T
- (B) For every type T except void and function type, there can be an array of T
- (C) When an array is passed to a function, C compiler creates a copy of array
- (D) 2D arrays are stored in column major form

60. In C, 1D array of int can be defined as follows and both are **correct**.

```
int array1D[4] = {1,2,3,4};
```

```
int array1D[] = {1,2,3,4};
```

But given the following definitions (along-with initialization) of 2D arrays :

```
int array2D[2][4] = {1,2,3,4,5,6,7,8};
/* (i) */
```

```
int array2D[][4] = {1,2,3,4,5,6,7,8};
/* (ii) */
```

```
int array2D[2][] = {1,2,3,4,5,6,7,8};
/* (iii) */
```

```
int array2D[][] = {1,2,3,4,5,6,7,8};
/* (iv) */
```

Pick the **correct** option(s).

- (A) Only (i) is correct
- (B) Only (i) and (ii) are correct
- (C) Only (i), (ii) and (iii) are correct
- (D) All (i), (ii), (iii) and (iv) are correct

61. What does the following expression mean?

```
char *(*(* a[N]) ()) ());
```

- (A) A pointer to a function returning array of n pointers to function returning character pointers
- (B) A function return array of N pointers to functions returning pointers to characters
- (C) An array of n pointers to function returning pointers to characters
- (D) An array of n pointers to function returning pointers to functions returning pointers to characters

62. HOLD/HLDA is related to

- (A) cycle stealing
- (B) handshaking
- (C) DMA
- (D) reading from and writing to RAM

63. Point out the **false** one.

- (A) 'IF' is always a two-way branching
- (B) Switch-case can be implemented using IF
- (C) Switch-case is multiway-branching
- (D) Unconditional GOTO is encouraged in structured programming

64. The noise margin of a TTL gate is about

- (A) 0.2V
- (B) 0.4V
- (C) 0.8V
- (D) 0.6V

65. Which of the following is a characteristic of a linear queue?
- (A) The queue has to be emptied at regular interval of time
  - (B) Requires two pointers
  - (C) The empty condition is  $\text{front} = \text{rear}$
  - (D) All of the above
66. The searching technique that takes  $O(1)$  time to find an item is
- (A) tree search
  - (B) binary search
  - (C) linear search
  - (D) hashing
67. In propositional logic, the following rule :  
 $[(A \rightarrow B) \ \& \ (B \rightarrow C)] \rightarrow [(A \rightarrow C)]$   
 represents
- (A) Modus Ponens
  - (B) Modus Tollens
  - (C) Hypothetical Syllogism
  - (D) Disjunctive Syllogism
68. All of the informations in a sinusoidal image can be captured by
- (A) the spatial frequency
  - (B) the magnitude (+ve or -ve)
  - (C) the phase
  - (D) All of the above

69. Which of the following is a characteristic of PROLOG?
- (A) AI Programming Language
  - (B) Built-in Inference Engine
  - (C) Automatic Backtracking
  - (D) All of the above
70. Regarding UNIX, which one of the following is **not true**?
- (A) It is multi-user
  - (B) Everything in UNIX is either a file or a process
  - (C) It has no communication facility
  - (D) It is portable
71. A context-free grammar  $G = (V, \Sigma, R, S)$  is said to be in Chomsky normal form, if
- (A)  $R \supseteq (V - \Sigma) \times V^2$
  - (B)  $R \subseteq (V - \Sigma) \times V^2$
  - (C)  $R \subseteq (V - \Sigma) \times V^3$
  - (D)  $R \supseteq (V - \Sigma) \times V^3$
72. Which of the following is an example of a Meta Language?
- (A) BNF
  - (B) CBL-Syntax
  - (C) Pascal Syntax diagram
  - (D) All of the above
73. What is the transmission time for a 2.5 KB message, if the bandwidth of the network is 1 Gbps?
- (A) 0.030 ms
  - (B) 0.020 ms
  - (C) 0.050 ms
  - (D) 0.010 ms

74. The Cache memory concept is based on the principle of
- (A) memory-mapped I/O
  - (B) locality of reference
  - (C) I/O mapped I/O
  - (D) look ahead carry

75. Which of the following is a characteristic feature of OLED displays?

- (A) Reliance on backlighting for illumination
- (B) Use of a liquid crystal layer for color modulation
- (C) Self-emissive properties of individual pixels
- (D) Requirement of a vacuum-sealed chamber for operation

76. Which of the following statements accurately describes Bresenham's line drawing algorithm?

- (i) It is primarily used for rendering curved lines in computer graphics.
- (ii) It ensures that the generated line passes through all given points.
- (iii) It minimizes the number of calculations required for drawing a line.
- (iv) It is suitable for anti-aliasing purposes in high resolution displays.
- (v) It relies on recursive subdivision for accurate line rendering.

Choose the **correct** answer from the options given below :

- (A) (i), (iii)
- (B) (ii), (iv)
- (C) (iii), (v)
- (D) (i), (v)

77. Which of the following statements about weaving in Aspect-Oriented Software Development is **false**?

- (A) Weaving is the process of integrating aspects with the base code
- (B) Weaving can occur at compile-time, load-time or runtime
- (C) Weaving can only be done using compile-time instrumentation
- (D) Weaving allows for the modularization of cross-cutting concerns

78. Which one of the following is best suited for learning algorithm pertaining to multilayer perceptron?

- (A) Back propagation
- (B) Hopfield network
- (C) Boltzmann machine
- (D) None of the above

79. In a Generic Process Model, which phase typically involves creating a Specification (SRS)?

- (A) Framework Activity
- (B) Software Development
- (C) Software Testing
- (D) None of the above

80. What role do membership functions play in fuzzy logic systems?

- (A) They define the input and output variables of the system
- (B) They represent the degree of truth or falsity of linguistic variables
- (C) They specify the goals and subgoals of the planning process
- (D) They model the state space of the problem domain

81. Which of the following network topologies provides high fault tolerance and scalability but requires more cabling than other topologies?
- (A) Ring Topology
  - (B) Mesh Topology
  - (C) Star Topology
  - (D) Bus Topology
82. What is the primary function of HDLC (High-Level Data Link Control) in data communication?
- (A) To ensure error-free transmission of data
  - (B) To provide flow control between sender and receiver
  - (C) To establish a physical connection between devices
  - (D) To regulate access to the communication medium
83. What is the key characteristic of a Hopfield network that distinguishes it from other neural network architectures?
- (A) Supervised learning
  - (B) Unidirectional connections
  - (C) Recurrent connections
  - (D) Sigmoid activation functions
84. Parallel sorting algorithms often use a divide-and-conquer strategy. Which of the following properties of comparison trees makes them particularly suitable for this approach?
- (A) Balanced structure
  - (B) Minimal height
  - (C) Ordered arrangement of elements
  - (D) Dynamic resizing capability
85. Which of the following statements is/are **true** regarding the application of greedy algorithms to the activity selection problem?
- (i) In the activity selection problem, a greedy algorithm always selects the activity with the shortest duration first.
  - (ii) A greedy algorithm can provide an optimal solution for the activity selection problem by always selecting the next activity that starts after the last selected activity ends.
  - (iii) The activity selection problem can be solved using dynamic programming instead of a greedy algorithm.
  - (iv) A greedy algorithm for the activity selection problem requires sorting the activities based on their finish times.
- (A) Only (ii) and (iv)
  - (B) Only (i) and (iii)
  - (C) Only (ii), (iii) and (iv)
  - (D) Only (i), (ii) and (iv)
86. During the loading phase of a program, which of the following actions typically occurs?
- (A) Conversion of source code to machine code
  - (B) Allocation of memory for the program's variables
  - (C) Execution of the program's instructions
  - (D) Transfer of the program's instructions from secondary storage to main memory

**87.** In a demand-paging system, when does relocation of a program occur?

- (A) During the loading phase
- (B) During the linking phase
- (C) During the execution phase
- (D) During the compilation phase

**88.** Which of the following library functions in C is used to compare two strings?

- (A) strcmp()
- (B) strcmpare()
- (C) strcoll()
- (D) compare()

**89.** In C programming, how does the 'switch' statement enhance sequence control compared to multiple 'if-else' statements?

- (A) The 'switch' statement allows for evaluating multiple conditions simultaneously, whereas 'if-else' statements do not
- (B) The 'switch' statement simplifies the control flow by evaluating a single expression against multiple constant values, reducing the complexity compared to nested 'if-else' statements
- (C) The 'switch' statement can handle ranges of values more effectively than 'if-else' statements
- (D) The 'switch' statement provides better performance for all types of conditions compared to 'if-else' statements

**90.** Which of the following properties distinguishes LL(1) grammars from other types of grammars commonly used in parsing?

- (A) They can be parsed using a single lookahead symbol
- (B) They generate languages that are context-free
- (C) They prioritize leftmost derivations over rightmost derivations
- (D) They are suitable for parsing ambiguous grammars

**91.** Consider a declaration 'int a, b, c;' in a high-level language. How would an intermediate code generator typically represent this declaration in a three-address code format?

- (A) Declare int a, b, c
- (B) a = b = c = 0
- (C) int a; int b; int c;
- (D) Intermediate code does not handle declarations

**92.** Suppose a program contains 10% code to be executed serially. How does efficiency of processors change if the number of processors is increased from 4 to 8?

- (A) 0.697 to 0.858
- (B) 0.137 to 0.037
- (C) 0.769 to 0.588
- (D) 0.690 to 0.880

93. What is the purpose of the `seek()` function in C++ file streams?
- (A) Sets the position of the output pointer
  - (B) Sets the position of the input pointer
  - (C) Closes the file stream
  - (D) Flushes the output buffer
94. What is the primary purpose of a valid time?
- (A) To represent the time when a fact is true in the real world
  - (B) To represent the time when a fact is recorded in the database
  - (C) To represent the time when a fact expires or becomes invalid
  - (D) To represent the time when a fact is modified in the database
95. Which of the following is **not** a typical requirement for effective genome data management?
- (A) Support for versioning and lineage tracking
  - (B) Scalability to handle large-scale genomic datasets
  - (C) Integration with biomedical literature databases
  - (D) Ability to analyze genetic variations and mutations
96. Which of the following statements about automorphisms of a group is **true**?
- (A) Every group has a unique automorphism
  - (B) The identity automorphism is the only automorphism of a group
  - (C) Automorphisms form a group under composition
  - (D) Automorphisms are always isomorphisms between groups
97. Which of the following arbitration policies grants access to the processor with the highest priority during contention?
- (A) Round-robin arbitration
  - (B) Fixed priority arbitration
  - (C) Random arbitration
  - (D) Weighted fair arbitration
98. Which of the following scheduling algorithms aims to strike a balance between priority-based scheduling and round-robin scheduling by allowing processes to dynamically adjust their priority levels based on their execution behavior?
- (A) Shortest Remaining Time First (SRTF) scheduling
  - (B) Lottery scheduling
  - (C) Feedback scheduling
  - (D) Guaranteed scheduling
99. Which of the following statements is/are **true** about applications of simplex mode?
- (i) Simplex mode is ideal for situations where data transmission needs to be quick and bidirectional.
  - (ii) Broadcasting radio signals to listeners is an example of simplex communication.
  - (iii) Simplex mode is commonly used in applications like file transfer protocols.
  - (iv) Simplex communication is suitable for applications where immediate feedback from the receiver is essential.
- (A) Only (ii)
  - (B) Only (i) and (iii)
  - (C) Only (ii) and (iv)
  - (D) Only (iii) and (iv)

**100.** Which of the following is **not** a field?

- (A) Integers modulo  $n$  under addition and multiplication modulo  $n$
- (B) Rational numbers under addition and multiplication
- (C) Real numbers under addition and multiplication
- (D) Polynomials with real coefficients under addition and multiplication

**101.** Which of the following is **not** a common cache coherence protocol?

- (A) Snoopy protocol
- (B) Directory-based protocol
- (C) MSI protocol
- (D) Multicast protocol

**102.** Which of the following types of addressing is typically used in relocatable programs to allow for flexible memory allocation?

- (A) Absolute addressing
- (B) Relative addressing
- (C) Direct addressing
- (D) Indirect addressing

**103.** What happens if you attempt to open a file in output mode that doesn't exist?

- (A) It creates a new file automatically
- (B) It throws a runtime error
- (C) It prompts the user to create the file
- (D) It returns a null pointer

**104.** In group theory, what is an automorphism of a group?

- (A) A mapping from the group to itself that preserves the group operation and the identity element
- (B) A bijection from the group to itself that preserves the group operation but not necessarily the identity element
- (C) A mapping from the group to another group that preserves the group operation and the identity element
- (D) A bijection from the group to another group that preserves the group operation but not necessarily the identity element

**105.** While discussing the types of database backups, which of the following methods involves making a copy of all data blocks that have changed since the last backup, minimizing the time and storage space needed?

- (A) Full backup
- (B) Incremental backup
- (C) Differential backup
- (D) Snapshot backup

**106.** Unix is a

- (A) single user, single tasking OS
- (B) single user, multi-tasking OS
- (C) multi-user, multi-tasking OS
- (D) None of the above

**107.** Which of the following is a command for searching a pattern in a file?

- (A) find
- (B) grep
- (C) look up
- (D) None of the above

**108.** The minimum number of links for any directory file is

- (A) 3
- (B) 4
- (C) 1
- (D) 2

**109.** The default value of umask is

- (A) 1024
- (B) 4021
- (C) 0022
- (D) 1001

**110.** Binary executable required for system administration is usually placed in \_\_\_\_ directory.

- (A) /etc
- (B) /usr
- (C) /dev
- (D) None of the above

**111.** A null variable 'a' can be created using

- (A) a=
- (B) a=""
- (C) a=""
- (D) All of the above

**112.** The process id numbers of the processes vhand, bdf flush, sched and init are

- (A) 1, 2, 3 and 4
- (B) 2, 3, 0 and 1
- (C) 3, 4, 1 and 2
- (D) 0, 1, 2 and 3

**113.** Define Agile Scrum methodology.

- (A) Project management that emphasizes incremental progress
- (B) Project management that emphasizes decremental progress
- (C) Project management that emphasizes neutral progress
- (D) Project management that emphasizes no progress

**114.** In which step of SDLC is actual programming of software code done?

- (A) Development and Documentation
- (B) Maintenance and Evaluation
- (C) Design
- (D) Analysis

**115.** Which of the following statements is/are **correct**?

- (i) Random Access Memory serves as a temporary storage for data and instructions.
- (ii) SSD is a type of volatile memory.
- (iii) Virtual Memory is used to store BIOS.
- (iv) ROM stores firmware.
- (A) Only (i) and (ii)
- (B) Only (i), (ii) and (iii)
- (C) Only (i) and (iv)
- (D) Only (i), (ii) and (iv)



**116.** Which of the following statements is/are **correct**?

- (i) DRAM stores each bit in an electrical capacitor.
- (ii) DRAM is commonly used for main memory in Personal Computers.
- (iii) Periodical refresh is needed for DRAM.
- (iv) SRAM and SDRAM are same.

- (A) Only (i) and (ii)
- (B) Only (i), (ii) and (iii)
- (C) Only (i) and (iv)
- (D) Only (i), (ii) and (iv)

**117.** Which of the following statements is **correct**?

- (A) Address bus is Bidirectional and Data bus is Unidirectional
- (B) Address bus is Unidirectional and Data bus is Bidirectional
- (C) Both are Unidirectional
- (D) Both are Bidirectional

**118.** Which of the following statements is **wrong** related to instruction pipeline?

- (A) Fetch stage retrieves the next instruction from memory
- (B) Decode stage reads operands
- (C) Execute stage interprets the instruction and determines the required operations
- (D) Write-back stage writes the result of the instruction back to a register

**119.** Which of the following statements is **wrong** related to addressing modes?

- (A) In relative addressing modes, program counter register is used instead of a general purpose registers
- (B) Stack instructions are in Implicit addressing mode
- (C) In zero-address instruction method, the operands are stored in the top of a stack
- (D) In direct addressing mode arithmetic instruction, the operand value is specified directly within the instruction itself

**120.** Match the following :

- |            |  |
|------------|--|
| (a) DMA    | (i) Transforms digital signals into a user understandable form                   |
| (b) Spool  | (ii) Transfers data directly to main memory without CPU                          |
| (c) Output | (iii) Holds data in temporary storage for execution by another device or program |
| (d) Cache  | (iv) Stores and retrieves frequently used data in a temporary storage            |

- (A) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
- (B) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
- (C) (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)
- (D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

**121.** Pseudo-ops in Assembly language programs are

- (A) Mnemonics
- (B) Assembler Directives
- (C) Operands
- (D) Opcodes

**122.** Signal generated by external hardware to gain attention of processor is

- (A) Interrupt
- (B) INTA
- (C) IVT
- (D) HOLD

**123.** Match the following service numbers with their functions in INT 21H of 8086 processor :

- (a) AH = 01H (i) Write an ASCII Character to monitor
- (b) AH = 02H (ii) Write a String to monitor
- (c) AH = 09H (iii) Program Termination
- (d) AH = 4CH (iv) Read an ASCII Character from keyboard

- (A) (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)
- (B) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
- (C) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
- (D) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

**124.** Type of USB connector commonly used for connecting printers and scanners is

- (A) USB Type-A
- (B) USB Type-B
- (C) USB Type-C
- (D) Mini USB

**125.** 'TRIM' command is related to

- (A) Hard Disk Drives
- (B) Solid-State Drives
- (C) Random Access Memory
- (D) Magnetic Tape Drives

**126.** Which one of the following is related to 'BSOD'?

- (A) System Error
- (B) Protocol
- (C) Hardware Port
- (D) Malware

**127.** Which of the following is **not** a reason for unstable or **incorrect** system clock on computers?

- (A) CMOS Battery Failure
- (B) Incorrect BIOS/UEFI Settings
- (C) Malware / viruses
- (D) Soft errors in RAM

**128.** 'Ping' command is used for

- (A) sending a test signal to check reachability of a network device
- (B) identifying the route that a packet takes while traveling to its destination
- (C) displaying the IP configuration for all network interfaces on a computer
- (D) connecting to a remote machine securely over the network

**129.** Which of the following is **not** a way in Windows to identify physical address of the network adapter connected in the computer?

- (A) Network connection details of adapter
- (B) Ipconfig command
- (C) Getmac command
- (D) Nslookup command

**130.** Which of the following is **not** a functionality of Linux command `uname`?

- (A) Display user name
- (B) Display host name
- (C) Display kernel version
- (D) Display operating system name

**131.** Which of the following computer components is most related to UEFI?

- (A) BIOS
- (B) System memory
- (C) Power supply
- (D) Display

**132.** Which signature algorithm is required while installing a server certificate for deploying SMB over QUIC?

- (A) SHA256RSA or greater
- (B) AES
- (C) SHA256 or greater
- (D) None of the above

**133.** Which file permission is represented in Linux by the octal expression 4644?

- (A) `rwSr-r`
- (B) `rwxr-Sr`
- (C) `rwxr-r`
- (D) None of the above

**134.** Which one of the following is highly effective in environments where low latency is required such as RDBMS and high frequency trading platform?

- (A) SAS
- (B) NVMe
- (C) SATA
- (D) SAS-4

**135.** Which of the following statements is/are **correct** about paging scheme?

- (i) If valid/invalid bit is set to 1, it indicates that the page is not present in the main memory resulting in a page fault.
- (ii) The occurrence of page fault calls the page fault interrupt which executes the page fault handling routine.

- (A) Only (i)
- (B) Both (i) and (ii)
- (C) None of the above
- (D) Only (ii)

**136.** Which of the following statements is/are **correct** about RAID?

(i) In RAID 0 and RAID 1, data is split evenly across two or more disks and there is no redundancy.

(ii) RAID 2 uses bit level striping.

(iii) RAID 3 uses byte level striping with dedicated parity.

(A) Only (ii) and (iii)

(B) Only (i) and (ii)

(C) All of the above

(D) Only (i) and (iii)

**137.** If the time to service a page fault is 10 milliseconds and a memory access takes 1 microsecond, then a 99.99% hit ratio results in average memory access time of

(A) 1.9999 milliseconds

(B) 1 millisecond

(C) 9.999 microseconds

(D) 2 microseconds

**138.** Which of the following statements are **correct** about multithreading?

(i) Intel claims up to 30% improvement with its Hyper-Threading Technology.

(ii) Hand-tuned assembly language programs using MMX or AltiVec extensions do not benefit from hardware multithreading.

(iii) Multithreading may lead to degraded performance due to contention for shared resources.

(A) Only (ii) and (iii)

(B) Only (i) and (ii)

(C) All of the above

(D) Only (i) and (iii)

**139.** Which of the following statements is/are **correct** about virtualization?

(i) When storage is virtualized, it is not paired to any particular server.

(ii) Server virtualization means hardware is adjusted on demand. As workloads shrink, servers can be discontinued and as workload increases, the same servers can be turned back on.

(A) Only (i)

(B) Both (i) and (ii)

(C) None of the above

(D) Only (ii)

**140.** Which of the following statements is/are **correct** about interrupt driven I/O?

(i) The CPU stays in the loop to know if the device is ready for transfer and has to continuously monitor the peripheral device.

(ii) It cannot do any work until the transfer is complete.

(A) Only (i)

(B) Both (i) and (ii)

(C) None of the above

(D) Only (ii)

**141.** Which of the following vendors offer Hyper Converged Infrastructure software?

(A) VMware vSAN

(B) Nutanix Acropolis

(C) Microsoft's Azure

(D) All of the above

142. Which of the following statements are **correct** about REST and SOAP?

- (i) REST APIs use multiple standards like HTTP, JSON, URL and XML for data communication and transfer.
- (ii) REST has SSL due to which, in the cases like Bank Account Password, Card Number REST is preferred over SOAP.
- (iii) SOAP is a protocol and REST is an architectural pattern.

- (A) Only (ii) and (iii)
- (B) Only (i) and (ii)
- (C) All of the above
- (D) Only (i) and (iii)

143. Which of the following statements is/are **correct** about backup?

- (i) In differential back up strategy, successive copies of data contain only the changed part since the preceding backup copy was made.
- (ii) In incremental back up strategy, only the difference in the data from last full backup is saved.

- (A) Only (i)
- (B) Both (i) and (ii)
- (C) None of the above
- (D) Only (ii)

144. Which of the following statements is/are **correct** about exec( ) system call?

- (i) The new program is loaded into an entire different process space.
- (ii) The process ID of the new process is changed.
- (iii) If the currently running process has multiple threads, then all of them will be terminated and new process image will be loaded and executed.

- (A) Only (i)
- (B) Only (i) and (ii)
- (C) Only (ii)
- (D) Only (iii)

145. Which of the following statements are **correct** about Serial Attached SCSI?

- (i) SAS can manage as many as 128 direct point-on-point connections.
- (ii) It is a half-duplex interface, so it cannot execute read and write functions simultaneously.
- (iii) It is compatible with SATA devices.

- (A) Only (ii) and (iii)
- (B) Only (i) and (ii)
- (C) All of the above
- (D) Only (i) and (iii)

146. The poor performance of a virtual memory system when the same pages are being loaded repeatedly due to a lack of main memory to keep them in memory is called as

- (A) page fault
- (B) thrashing
- (C) demand paging
- (D) None of the above

147. Which of the following statements are **correct** about encryption?

- (i) Secure Sockets Layer (SSL) protocol encrypts and decrypts the data exchanged between web browsers and web servers.
- (ii) Pretty Good Privacy (PGP) software encrypts and decrypts the email messages and files.
- (iii) Virtual Private Network (VPN) technology encrypts and decrypts the data sent over a public network.

- (A) Only (ii) and (iii)
- (B) Only (i) and (ii)
- (C) All of the above
- (D) Only (i) and (iii)

**148.** Manufacturers of Ethernet NICs request a block of Ethernet addresses from \_\_\_\_\_ to ensure that no two NICs have the same address.

- (A) IANA
- (B) ICANN
- (C) IEEE
- (D) ANSI

**149.** The maximum number of IP Addresses that can be assigned to the nodes with a subnet mask of 255.255.255.224 is

- (A) 32
- (B) 16
- (C) 14
- (D) 30

**150.** Feedback about problems in the communication environment is provided with \_\_\_\_\_ protocol.

- (A) BGP
- (B) ICMP
- (C) TCP
- (D) DHCP

**151.** The value of MTU size in the default VLAN configuration is

- (A) 1500
- (B) 1024
- (C) 1600
- (D) 2048

**152.** In the case of Intrusion Detection System (IDS) and Intrusion Prevention System (IPS), identify the **wrong** statement from the following options.

- (A) IDS can only report the threats
- (B) IPS can detect and prevent the threats
- (C) Inline usage of firewalls with IPS is not needed to improve the network security
- (D) All the statements are correct

**153.** In the case of Access Control Lists (ACL), which of the following statements is **wrong**?

- (A) ACLs provide a basic level of security for network access
- (B) The ACL is checked from top to bottom line by line
- (C) If a condition match is true, the packet is permitted or denied and the rest of the ACL statements are not checked
- (D) If no match is present, the default is to allow the packet

**154.** The first message sent by the client to get an IP address from the DHCP server is

- (A) DHCP Request message
- (B) DHCP Discover message
- (C) DHCP Offer message
- (D) DHCP Release message

155. Which of the following is **not** a feature of the Virtual Private Network?

- (A) It creates tunnels through the internet to interconnect private networks in different geographic isolations
- (B) Security can be ensured with encryption and special protocols
- (C) It supports SSL and doesn't support TLS
- (D) None of the above

156. If a host in a network is given the IPv4 address as 10.44.17.210/27, find the **correct** statement from the following.

- (A) Usable Hosts – 30 Network Address – 10.44.17.192 Mask 255.255.255.224
- (B) Usable Hosts – 62 Network Address – 10.44.17.192 Mask 255.255.255.192
- (C) Usable Hosts – 14 Network Address – 10.44.17.208 Mask 255.255.255.240
- (D) Usable Hosts – 32 Network Address – 10.44.17.210 Mask 255.255.255.224

157. Among the following statements, which is an **incorrect** statement regarding Network Attached Storage (NAS)?

- (A) NAS environment is a good choice for shared data access
- (B) A NAS system doesn't require a CPU as its component
- (C) The efficiency of NAS depends on the performance of the network
- (D) NAS systems are vulnerable to hackers and attackers

158. Among the following statements, which is **incorrect** regarding the RAID configurations?

- (A) RAID 0 is the fastest RAID mode since it writes data across all of the volume's hard drives
- (B) RAID 1 provides enhanced data security since all data is written to each hard drive in the volume
- (C) RAID 5 writes data across all hard drives in the volume and a parity block for each data block
- (D) All the above statements are correct

159. Select the service **not** offered by the NAS system from the given options.

- (A) Notifications Management
- (B) Access Controls and Management
- (C) Active Directory Services
- (D) Backup Services

160. Which of the following RAID architectures is known as double-parity RAID?

- (A) JBOD
- (B) RAID-6
- (C) RAID-10
- (D) RAID-50

**161.** Among the following statements, which is **false** in NAS-shares?

- (A) In the NAS share name field, letters, numbers, hyphens (-), underscore (\_) and dollar (\$) can be used in any combination
- (B) NAS OS gives the option to add shares/volumes from NAS OS and third party NAS/server devices that are located outside the LAN
- (C) NAS can join a Windows Workgroup or a Windows Active Directory
- (D) All the statements are correct

**162.** The default port number used by NAS Network for encrypted backup is

- (A) 870
- (B) 20
- (C) 8080
- (D) 22

**163.** Which of the following NAS file system protocols is supported only on the Microsoft Windows platform?

- (A) SMB
- (B) NFS
- (C) AFP
- (D) APFS

**164.** Which of the following is a famous brand in producing NAS devices?

- (A) Apple
- (B) Microsoft
- (C) Synology
- (D) Motorola

**165.** Among the following statements, which is **incorrect** in the NAS environment?

- (A) Incremental backup is most space efficient
- (B) Failover is the ability to switch automatically and seamlessly to a reliable system
- (C) Encryption can be used for optimizing backed up data space
- (D) NAS is not the best fit for high-speed environments that need high I/O and low latency in storage

**166.** Select the **wrong** statement from the following.

- (A) Media Streaming and Sharing can be implemented with NAS
- (B) NAS can be integrated with cloud storage
- (C) Firewalls and Access Logs are supported in NAS
- (D) All the statements are correct.

**167.** Which of the following statements is **incorrect** regarding composable functions in the android environment?

- (A) A modifier is not used to augment or decorate composable
- (B) @ composable annotation must be added before the function
- (C) @ composable function can't return anything
- (D) Composable function are like regular functions with few differences



**168.** Which of the following is **not** a function in the cursor class for database operations in the Android Environment?

- (A) getPosition()
- (B) getColumnName()
- (C) executeQuery()
- (D) isClosed()

**169.** Which of the following statements is **false** regarding an android activity?

- (A) onStart() – The Android activity lifecycle starts with this and is called when the activity is first created
- (B) onResume() – This is called when the user starts interacting with the application
- (C) onDestroy() – This callback is called before the activity is destroyed by the system
- (D) All the statements are correct

**170.** Which of the following event functions is **not** directly available in the Android Environment?

- (A) onCreateContextMenu()
- (B) onDoubleClick()
- (C) onLongClick()
- (D) onFocusChange()

**171.** Which of the following is an invalid user input control in Android Environment?

- (A) AutoCompleteTextView
- (B) Spinner
- (C) ListBox
- (D) RadioButton

**172.** Which of the following methods is **not** used in Palette.Builder class in the Android Environment?

- (A) maximumColorCount()
- (B) setRegion()
- (C) All of the above
- (D) None of the above

**173.** Which of the following is **not** supported in Android RecyclerView view layout manager?

- (A) Grid Layout Manager
- (B) Circular Layout Manager
- (C) Linear Layout Manager
- (D) Custom Layout Manager

**174.** Which of the following is/are the main component(s) of an Android Application?

- (A) Activities and Services
- (B) Broadcast Receivers
- (C) Content Providers
- (D) All of the above

**175.** Which ACPI state involves the system writing the contents of RAM to the hard drive and then completely powering off?

- (A) S1
- (B) S2
- (C) S3
- (D) S4

**176.** What is the maximum data transfer speed of USB 3.1 Gen 2?

- (A) 480 Mbps
- (B) 5 Gbps
- (C) 10 Gbps
- (D) 20 Gbps

**177.** How does link aggregation benefit network connections?

- (A) It restricts network access to specific devices for security reasons
- (B) It allows for increased bandwidth and higher data transfer rates
- (C) It filters unwanted traffic on a network
- (D) It prioritizes data packets based on their content

**178.** What distinguishes delta updates from traditional firmware updates?

- (A) Delta updates improve device performance, while traditional updates focus on security enhancements
- (B) Delta updates only update the portions of firmware that have changed, reducing the size of the update file
- (C) Delta updates are reversible, while traditional updates are irreversible
- (D) Delta updates exclusively apply to premium-tier devices

**179.** What happens internally when the TRIM command is executed on a SSD?

- (A) It permanently erases all data from the SSD
- (B) It marks unused blocks of data as available for new data, improving write performance
- (C) It initiates a full drive format process
- (D) It compresses all stored data to free up space

**180.** In Wi-Fi settings on a laptop, what does the term SSID refer to?

- (A) System Sleep Identifier
- (B) Screen Settings Identifier
- (C) Service Set Identifier
- (D) Signal Strength Identifier

**181.** How does HDMI ARC differ from standard HDMI connections?

- (A) HDMI ARC allows for the transmission of audio signals only
- (B) HDMI ARC supports one-way audio transmission from the TV to an external audio device
- (C) HDMI ARC permits bi-directional audio transmission between compatible devices
- (D) HDMI ARC provides higher video resolution compared to standard HDMI

**182.** Which of the following backup strategies involves backing up data at regular intervals, preserving changes since the last backup and requires the least storage space?

- (A) Full backup
- (B) Differential backup
- (C) Incremental backup
- (D) Manual backup

**183.** Which of the following command-line tools in Linux can be utilized to conduct memory errors on a laptop?

- (A) memtest86+
- (B) memverify
- (C) memcheck
- (D) memdiagnose

**184.** In the context of battery capacity, what does the term 'C-Rate' refer to?

- (A) The rate at which the battery discharges
- (B) The battery's internal resistance
- (C) The maximum charge the battery can hold
- (D) The rate at which the battery charges

**185.** Why is the utilization of edge computing significant in IoT before transmitting data to the cloud?

- (A) To increase cloud storage capacity
- (B) To enhance device battery life
- (C) To facilitate offline data processing
- (D) To reduce data latency

**186.** How can you sort a list in descending order using the sorted() function?

- (A) sorted(my\_list, reverse=False)
- (B) sorted(my\_list, descending=True)
- (C) sorted(my\_list, reverse=True)
- (D) sort(my\_list, descending=True)

**187.** What is the purpose of the count() method in Python tuples?

- (A) Counts the number of elements in the tuple
- (B) Counts the occurrences of a specific element in the tuple
- (C) Counts the number of unique elements in the tuple
- (D) Counts the elements in reverse order

**188.** The most recent standard in the IEEE 802.11 series published in the year 2021 is

- (A) 802.11n
- (B) 802.11ax
- (C) 802.11gx
- (D) 802.11nx

**189.** What is the output of the following Python program?

```
def greet(name): return f "Hello, {name}!"  
user_name = input("Enter your name:")  
message = greet(user_name)  
print(message)
```

- (A) Displays the length of the user's name
- (B) Displays a greeting message with the user's name
- (C) Requests the user to input a number
- (D) Displays the user's name in uppercase

**190.** What will be the output of the following code?

```
while True: print("This is an infinite loop")  
break
```

- (A) It will print "This is an infinite loop" once
- (B) It will print "This is an infinite loop" multiple times before terminating
- (C) It will result in an infinite loop without printing anything
- (D) It will print an error message

**191.** Which of the following Python libraries is frequently utilized for managing HTTP requests in Internet of Things (IoT) applications?

- (A) pandas
- (B) httprequests
- (C) httpio
- (D) requests

- 192.** Which of the following short-range wireless communication technologies is commonly used in home automation to enable a mobile application to communicate with IoT sensors?
- (A) RFID (Radio-Frequency Identification)
  - (B) Bluetooth Low Energy (BLE)
  - (C) Zigbee
  - (D) Infra Red
- 193.** What is a key benefit of utilizing Raspberry Pi Zero W in IoT projects?
- (A) High-speed data communication through USB-C
  - (B) Powerful GPU for graphics processing
  - (C) Integrated Wi-Fi and Bluetooth capabilities
  - (D) Large form factor for accommodating multiple sensors
- 194.** In the context of a PING command, what does 'DF' represent?
- (A) Datagram Fragmentation
  - (B) Data Flow
  - (C) Destination Flag
  - (D) Don't Fragment
- 195.** Which of the following configuration files does GRUB customizer edit to implement changes to the GRUB bootloader settings?
- (A) /etc/default/grub
  - (B) /boot/grub/grub.cfg
  - (C) /etc/grub.conf
  - (D) /var/lib/grub/custom.cfg
- 196.** Which entry in the sudoers file specifies the time duration during which a user can execute sudo commands without the need for re-authentication?
- (A) timeout
  - (B) timestamp\_timeout
  - (C) execution\_duration
  - (D) sudo\_timeout
- 197.** In TELNET communication, what role does the 'NAWS' option play?
- (A) Negotiate automatic window size
  - (B) Notify authentication when starting
  - (C) Network authorization and window synchronization
  - (D) Name and address windowing system
- 198.** During the Samba server installation, which of the following configuration files is commonly edited to define shared directories and permissions?
- (A) /etc/smb.conf
  - (B) /etc/samba/smbd.conf
  - (C) /etc/samba/config
  - (D) /etc/share.conf
- 199.** What is the primary focus of the 'deflate' algorithm in GZIP compression?
- (A) Lossless compression
  - (B) Fast compression speed
  - (C) Lossy compression
  - (D) High compression ratio
- 200.** What does modularity in software design mean?
- (A) Dividing software into independent components
  - (B) Writing software in multiple programming languages
  - (C) Ensuring software runs on all platforms
  - (D) Using a modular hardware system